

Indian Rose Annual - IRA 2000

Tropical Rose Breeding - and beyond

M.S. Viraraghavan

There is little doubt that the rose remains the world's most popular, indeed, romantic flower, but the signs of slippage from the No. 1 position so long taken for granted, are all too evident. With the rise in the popularity of the garden centre, there are a host of other plants available for the home gardener. Again, as a commercial cutflower, the difficulties encountered in India have unfortunately had an adverse effect on cutflower rose growing which in a way provides the commercial backbone for the popularity of the rose.

The status of the rose in home gardens is understandably affected by decreasing garden size as well as increase in shade. Rose experts, especially those of the insular kind tend to depict the rose as an exclusive aristocrat which requires its own space, and no competition from other garden plants. This attitude puts off potential rosarians, especially younger gardeners (on whom surely the future of gardening depends) from attempting roses. The reputation of the rose as a difficult plant which requires constant attention is certainly a factor which influences gardeners at a time when leisure available to tend the garden with both husband and wife working, is steadily getting abbreviated.

The problem of spraying pesticides, so often (mistakenly?) held out as essential is a very real one, and tending to a small garden, surrounded by neighbours who may not be keen gardeners, becomes tedious. Environmental concerns rightly discourage the use of pesticides. In countries like Germany, where the Green movement is strong, the older award winners have slipped badly in popularity in these days of little or no spraying. But a factor of special relevance when dealing with roses in tropical and subtropical climates is the competition roses face from other tropical evergreens endowed with lovely foliage which remain attractive throughout

the year.

In the tropics the true test of garden worthiness of a plant is beauty when not in flower, i.e., beauty of foliage and plant habit, in both of which roses come off second-best.

On commercial cutflower growing, a recent study by NABARD (National Bank for Agricultural and Rural Development) has established what a rose breeder could have forecast - that under the climatic conditions prevailing in India's cutflower growing regions, both the yield per unit area, as well as the quality of the flowers does not match Western standards.

While there are several reasons, the most obvious one is the reliance on cutflower varieties developed in the West which do not perform to optimum at our higher temperatures. For example, the average temperature in cutflower growing areas in India is a good 5 degrees C higher than what prevails in the corresponding locations in Israel. Clearly different varieties are required.

A serious additional problem is the need to maximise production during the Western winters when prices are highest. The competition during this time from southern hemisphere countries like Kenya, S. Africa and Colombia, which have the much easier task of maximising production in their summers is difficult to match, while growing the same varieties.

Thus it would seem that whether we consider roses in home gardens or as commercial cut flowers, drastic changes in what roses are grown, and how roses are grown, are both absolutely essential.

India's pioneering hybridiser, B.S. Bhattachaji, while emphasizing that rose growing is for the pleasure of producing beautiful flowers with normal care, pointed out that a separate line of breeding for the tropics is an absolute must.

Rose breeding in temperate climates has rightly concentrated in evolving varieties which stand up to the rigours of winter. Roses raised with this objective can hardly be expected to perform well in our Indian climate where surviving with

the ability to produce good blooms in the winter rose season is what is required.

Creating such a line of heat resistant roses is not an easy task by any reckoning, as it carries with it the daunting (!) prospect of consciously reversing the basics of selection underlying Western rose breeding over all these centuries !

What are the strategies for creating such a new line? Basically, one can think of three possible methods.

1. Breeding using heritage roses like 'R. Edward' (the original Bourbon), 'Archduke Charles' (China), 'Paul Neyron' (Hybrid Perpetual), 'Cécil Brunner' (China) and numerous tea roses which do well in India.
2. Creating a new line based on selected garden roses, e.g. 'Montezuma', 'Maria Callas' (Miss All American Beauty), 'Garden Party' and the like which are well adapted to the Indian climate.
3. Work with new unused species, especially with *R. clinophylla* (*R. involucrata*) which is the only rose of the tropical tracts of India (and of the world?) as well as *Rosa gigantea*, which again is found in India's North East.

Strategies 1 and 2 suffer from the disadvantage that basically no new genetic input is involved. As the incomparable Wilhelm Kordes put it - "The soup ladle will bring up only what is already in the tureen." There is little doubt that a separate line of breeding with *R. clinophylla* has much to offer, especially if heritage roses as well as easily grown garden roses are brought into the breeding line at the appropriate stage.

Before describing the work done with *R. clinophylla* so far, it is worthwhile to highlight some very interesting aspects of this species. Botanists refer to *R. clinophylla* (*R. involucrata*) as existing in three forms:

1. The most tropical form found in marshy locations in West Bengal and adjoining Bangladesh. This form with white scented flowers is remarkably well adapted to moist tropical conditions, growing as it does even in such waterlogged locations as the islands in the River Ganges.

2. The warm, dry climate form, found mainly in the Chota Nagpur Plateau near Ranchi and in the Valleys of the Rajmahal Hills, in the border area between Bihar and West Bengal states. This form again is quite often found growing with its roots in water but unlike the Bengal form, has the capacity to thrive in the dry heat of the area's summer, so different indeed from the moist heat of West Bengal.
3. Mt. Abu (Rajasthan) form growing in the extreme West of India at an altitude of about 4000 ft. This, unlike the earlier two forms bears flowers in corymbs, rather than individually. Clearly this form is happy in the dry cold of the semidesert - the Abu Hills rise out of the Thar desert.

There is yet another form found in Eastern India and in Burma which tends to resemble *R. bracteata*, which is a closely related species. It is manifest that in its various forms *R. clinophylla* has the unique characteristic of being able to resist heat, whether of the moist tropical kind or the dry subtropical kind as also waterlogged conditions.

Quite sometime back, while presenting a paper in the International Rose Conference held by the Royal National Rose Society in UK in 1977, E.F. Allen had suggested that, work with *R. clinophylla* would be potentially very rewarding if we are to breed a rose for warm climates. The suggestion then made was that the Noisette Rose, Lamarque could be used as the seed parent as it does well in India, with *R. clinophylla* as the pollen parent.

Work with *R. clinophylla* began in 1985 with a clone of the species collected in the wild near Ranchi (Bihar state). Details of the various crosses made in the period 1985-98 are shown in the family tree (annexed).

R. clinophylla as could be expected, is far removed indeed from modern roses, and raising a successful cross with it has been quite difficult. Three types of crosses were made:

1. With Teas, Noisettes, Polyanthas and other diploids, as seed parents.
2. With fertile garden roses (tetraploid) e.g. 'Little Darling', 'Queen Elizabeth'

(Floribundas); 'Independence', 'Lovers Meeting' and 'Julien Potin' (H.T's)

3. With the closely related *R. bracteata*.

Out of nearly 200 crosses made between 1985-89 a fair quantity of seed was harvested. Out of these only one seedling ['Mrs B.R. Cant' (Pink Tea) x *R. clinophylla*] has survived to produce pink single flowers with a curious resemblance to a clematis (see family tree). Back crossed into Mrs B.R. Cant, this seedling produced the more fertile double pink ["Pink Pink"] which in a further cross with the shrub rose 'Bonica', produced "Bonpink", a semi-double Floribunda which is quite fertile.

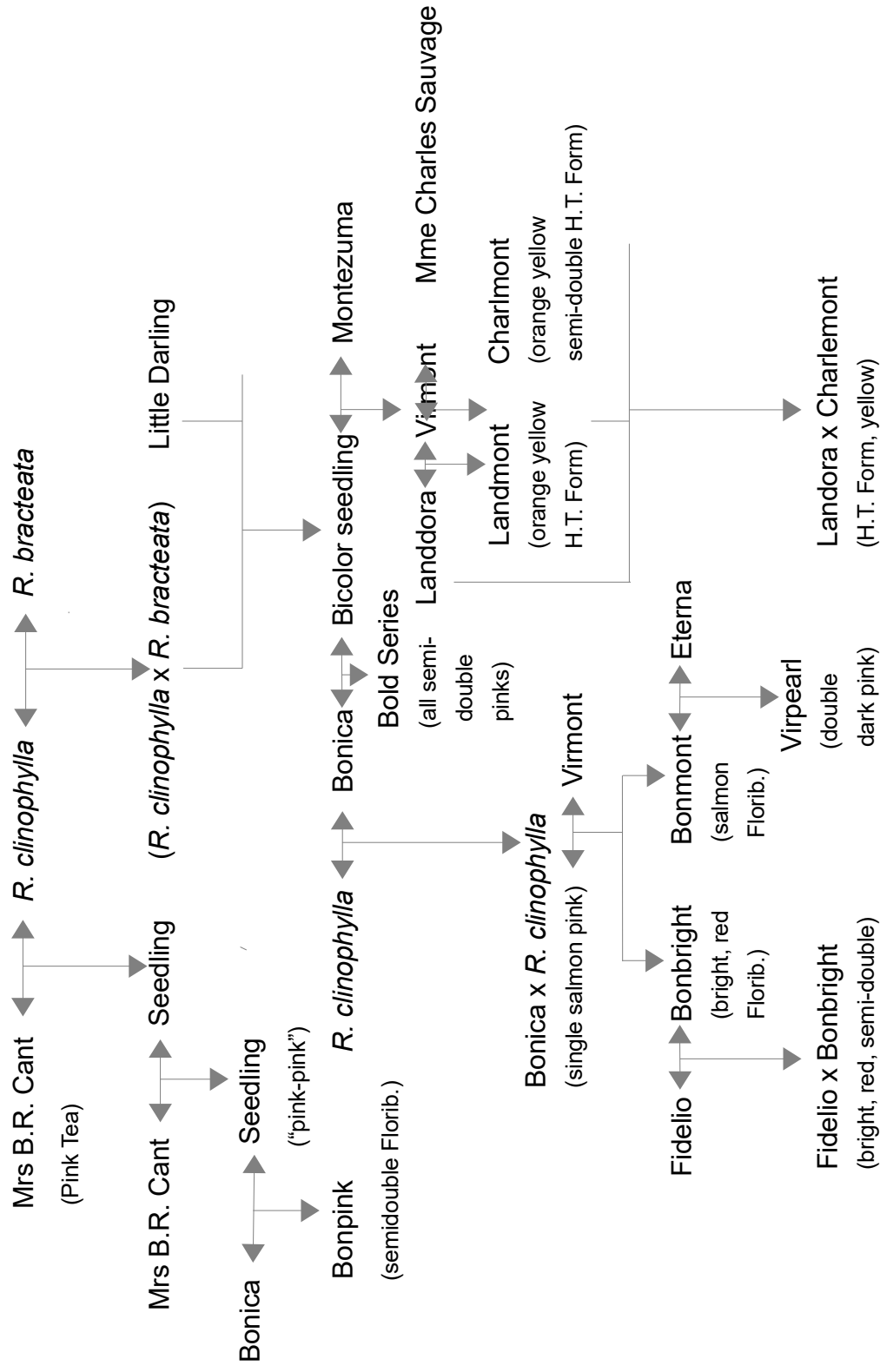
Of the various crosses of *R. clinophylla* with tetraploids, none survived but quite a few germinated from the cross of (*R. clinophylla* x *R. bracteata*). The most promising of these, with white single flowers, was again crossed into the Floribunda, 'Little Darling' to produce the bicolor seedling shown in the Family Tree. This seedling has pink and yellow flowers with the characteristic white center of *R. clinophylla* / *R. bracteata*, and repeats sparsely.

The pollen proved fertile though it does not work as a seed parent. It should be mentioned that out of the 150 seeds sown only 4 germinated and out of these the only rose that flowered was the bicolor seedling mentioned here. Crossed into 'Montezuma' this seedling has produced "Virmont" - an orange to salmon pink, semi double rose, which in further crosses with H.T.'s like 'Landora' (Sunblest) and 'Madame Charles Sauvage' has produced several interesting seedlings including "Landmont", an orange yellow rose with H.T. form and semiclimbing habit.

The bicolour seedling crossed into 'Bonica' resulted in the "Bold" series - semi double pink Floribundas. A single salmon pink seedling resulted in the direct cross of ('Bonica' x *R. clinophylla*) and this crossed in to "Virmont" produced the Floribundas "Bonmont" (salmon) and "Bonbright" (bright red) from which further generations are being raised.

Without getting into further details, what is important is that the *R. clinophylla* line has now reached a point where there are several repeat flowering bush roses in various colors with which to continue the work.

R. clinophylla Hybrids – A Family Tree



But the crucial question of whether these seedlings carry the gene for heat resistance and adaptability to waterlogged conditions remains unanswered. This can only be proved by extensive trials including the trial for that most intriguing of rose breeding prospects - Peter Harkness's suggestion that work with *R. clinophylla* could lead to a rose adapted to water gardening.

Work with *R. gigantea*, which is the other Indian species selected, has proved to be somewhat easier. Clearly the fact that *R. gigantea* is prominent via the Tea / Noisette roses in the pedigree of modern roses makes it easier to work with. The clone used in the work was the yellow coloured form raised from seed collected from Manipur (North East India).

R. gigantea is blessed with exceptional vigour. It grows to 50 feet, through trees, in N.E. India and has lovely disease resistant foliage, but the most interesting characteristic of all is the fact that it flowers in peak winter, clearly indicating the possibility of breeding a rose which will freely flower in winter, a feature so urgently required by our cutflower growers.

One of the great pioneers who worked with *R. gigantea* is Fr. Schoener who in the late 1920's and early 30's did a tremendous amount of work in Oregon and California, U.S.A. in collaboration with the Boyce Thomson Institute, New York, and its Director, Dr. Crocker. Fr. Schoener raised 20,000 seedlings from 1200 combinations between *R. gigantea* and well known garden roses. Dr. Crocker's opinion based on these extensive experiments is well worth quoting. He writes in a letter to Fr. Schoener, "I feel that you will have greenhouse roses produced in your crossings that are so much better than any others grown now that there will be no comparison. I have been specially struck by the long conical buds that appear on many of the Gigantea hybrids and the wonderful colouring and texture of the petals. Some of the foliage is wonderful." (American Rose Journal 1932).

Work with *R. gigantea* started in 1995. A large number of hybrid seedlings have been raised with the other parents ranging from H.T.'s and Floribundas to Teas and Polyanthas. Of these 4 have flowered so far.

1. A seedling from the cross ('Carmousine' [orange H.T] x *R. gigantea*) - a giant climber with flowers of pale apricot change, very much like 'Lady Hillingdon' (Tea)
2. A fully double light yellow climbing rose from the cross (Rêve d'Or x *R. gigantea*)
3. A white edged pink single shrub rose from the cross of a pink China rose ('Mr. Bluebird' ? x *R. gigantea*)
4. A single white flowered climber from the cross ('Echo' [Polyantha] x *R. gigantea*)

The next step is clearly to backcross these seedlings, as well as the other numerous hybrid progeny which have not yet flowered, with garden roses, to attain true repeat flowering and, hopefully distinctive cut flower roses with an 'India' signature.

Before concluding this section on rose breeding it will be worthwhile to specify what we should look for in these new roses. Clearly *disease resistance, a more acceptable plant habit, and plants of various forms from miniatures to shrubs* would be among the objectives. But the most important objective is surely disease resistance plus beautiful foliage.

About 150 years back, the well known English rosarian, Thomas Rivers talking about *R. bracteata* and it's good qualities, said he hoped that ultimately gardeners would not be satisfied unless all roses had foliage, brilliant and fragrant flowers, and a long season of flowering. This might seem, he said, an extravagant anticipation, but perseverance in breeding would yet achieve wonders.

The prospect of roses with evergreen foliage would appear to be well within the realms of practical possibility. Among the various rose species the following are evergreen or nearly so – *R. clinophylla*, *R. bracteata*, *R. sempervirens*, *R. banksia*, *R. gigantea*, *R. laevigata*, *R. wichuriana*. Apart from beautiful evergreen foliage, these share one very important characteristic - of being species native to the warmer portions of the world. The link between evergreen foliage and warm climate is

hopefully very close indeed.

As already noted it is necessary not only to breed better roses for the tropics, but also substantially alter current landscaping use. In today's smaller garden the attempt should be to integrate roses into the garden scene, as exclusive rose gardens are beyond the reach of the average rose gardener.

Many of the older roses do very well in tropical warmth and these can be planted together with various tropical plants which have contrasting plant habits, foliage and flowers. Pleasing associations can be made using ground cover plants of the type of perennial *verbenas*, dwarf spreading *lantanas*, the highly coloured mutants of sweet potato, the various types of *datura*, *hibiscus* - especially the erect growing smaller flowered kinds, and other shrubs like pentas and the numerous garden plants of the *Acanthacea* provide a wealth of choice. Some of the *acalyphas* - especially the ones with narrow foliage as well as the richly coloured *eranthemums* contrast very well with the paler coloured roses, which could be set off by bulbs like *zephyranthus* and the smaller flowered *hippeastrums* to create a rose garden which looks attractive even when the roses are not in bloom.

To conclude, originality, both in rose breeding and in rose gardening, is the name of the game.

Editors Note : This article is the text of the lecture given at the Asian Regional Rose Convention at Jaipur in January 1999

Copies of the original

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Hillview, Fernhill Road, Kodaikanal - 624 101, Tamil Nadu.



Landora x (Mme Charles Sauvage x R. Clinophylla Seedling)
 - M.S. Viraraghavan



Anna Ford x (Bonica x R. Clinophylla x Virmont)
 - M.S. Viraraghavan



R. clinophylla seedling x New Zealand

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Ahalya x Neelambari - Floribunda

- C.R. Chiplunkar

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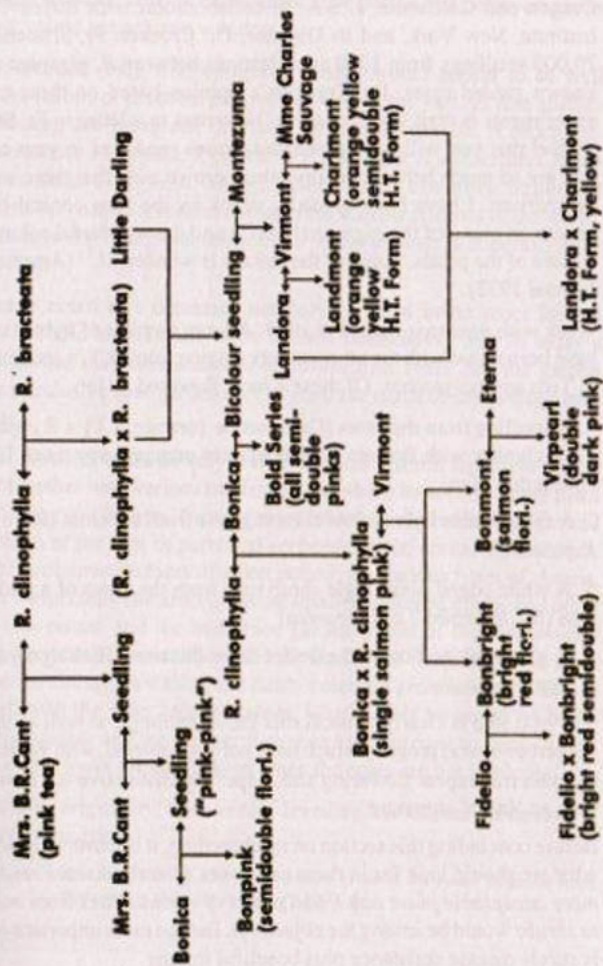
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